

SIKA CONTRIBUTION TO SUSTAINABLE AUTOMOTIVE INDUSTRY

SUSTAINABILITY IN STRUCTURAL BONDING

SikaPower® FOR INCREASED CRASH RESISTANCE

Crash resistant SikaPower® structural adhesives increase passenger safety, improve car stiffness and save costs due to decreasing of spot welding points and to simplification of the

manufacturing process. They also enable bonding of composite material mix (steel/aluminium/plastic) and improve long term car durability.

CASE STUDY

A Sustainability analysis of a real case study was made, to show the gains from using SikaPower®. These adhesives contribute to weight reduction of the car as well as to reducing the high number of welding points needed in the car production (and corresponding costs and energy input).

SikaPower® adhesives and sealants are heat-curing products based on epoxy hybrid technology, combining properties such as toughness, flexibility, elongation, mechanical strength and an excellent adhesion spectrum on various oiled steel, aluminum and plastic substrates. SikaPower® products can be used for crash and structural bonding, hem-flange, sealing and anti-flutter applications.

The weight reduction brings gains during the use phase of the automobile, as it leads to lower fuel consumption. The Carbon Footprint of the adhesive amount used was calculated, as well as of the welding and bonding process. The avoided carbon emissions due to lower fuel consumption during the vehicle's typical lifetime (approximately 150,000 km) are also shown.

To compare the environmental impacts with the benefits these products bring in the use phase of the car, the Global Warming Potential (GWP) was analysed.

- GWP measures the potential contribution to Climate Change, focusing on emissions of greenhouse gases, such as carbon dioxide (CO₂).



Automotive Industry.

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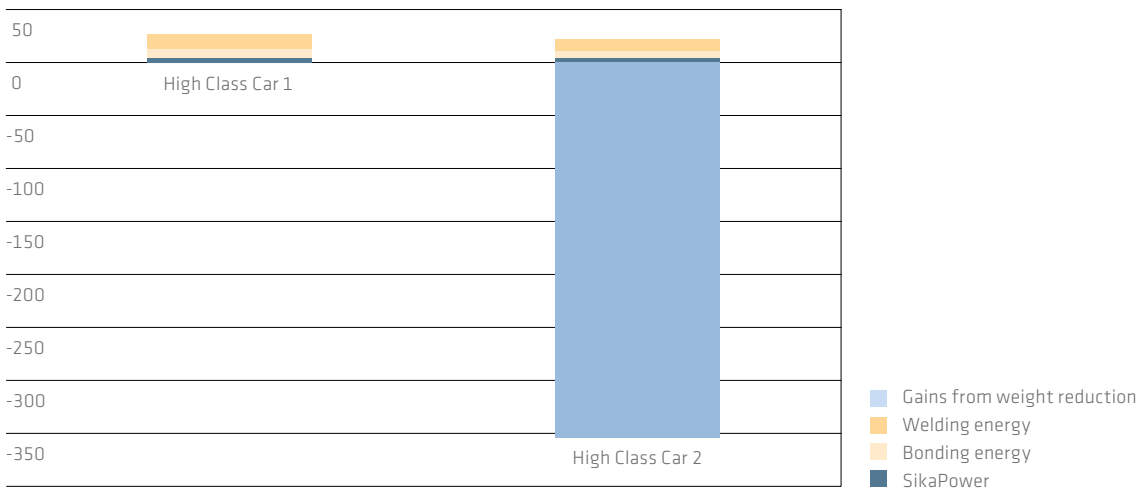
CARBON IMPACTS AND SAVINGS FROM SEALING

To illustrate the gains from using SikaPower®, a comparison was made on a premium segment car model, where two different setups were analysed.

- **High class car 1:** representing the serial production car
- **High class car 2:** representing an optimised body with less welding points and thinner metal sheets. Both cars achieved the stiffness and crash requirements.

By using SikaPower® adhesive, 1,000 welding points and 30 kg weight were eliminated, leading to a reduction in CO₂ emissions during the use phase.

Global Warming Potential (GWP) [kg CO₂-eq.]



For setup 2, not only is the GWP of the assembly process smaller, but also the total gains from the obtained weight reduction during the use phase are clearly demonstrated. The net gain from using SikaPower® amounts to 330 kg CO₂-eq. per vehicle.

CONCLUSIONS

Sika is dedicated to sustainable development and takes responsibility to provide sustainable solutions in order to improve material, water and energy efficiency in construction and automotive industry.

The project allows Sika to demonstrate its competence and expertise in sustainability, including all relevant quantitative contributions to a sustainable automotive industry. The value created by far outweighs the impacts associated with production, distribution and use. Sika is committed to mea-

sure, improve and communicate sustainable value creation. “More Value – Less Impact” refers to the company’s life cycle approach and commitment to maximize the value of its solutions to all stakeholders while reducing resource consumption and impacts on the environment.

To learn more about Sika’s Sustainable Solutions, please consult www.sika.com/sustainability

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